Victorian 6502 User Group Newsletter

KAOS

For People Who Have Got Smart

OSI	SYM	KIM	AIM	APPLE	UK101	ORANGE

The continuing saga of OSI. According to the latest PEEK (65), OSI are thriving and have contracted to sell 14 million dollars worth of computers in ninety days, and quotes Ken Worktz as saying "OSI has a huge inventory of hobbyist equipment and a large customer base of hobbyists". He promised that there are no plans to abandon that businss, though no new machines are planned at present. Watch this space for further developments.

We received a very nice letter from the principal of the Essendon Primary School, thanking the club for the use of the two Superboards and the interest club members are showing in helping the children at the school.

There seems to be some confusion as to what sort of programs we would like for the school. Members are saying that they don't know what level of maths etc. that the children would be up to. This is not a problem as we envisage the programs as being in two parts. The first part as a game that gives some reward for a correct answer and the second part as questions in maths, general knowledge etc. as needed. The two teachers at the school who are in charge of the Superboards are just about capable of modifying the second part of the program as they see fit (with a little bit of coaching on the side).

Michael Lemaire has written a very good program that shows the game part as an astronaut climbing a ladder up to his rocket and for every correct answer he climbs one step, when the astronaut reaches the top there is a countdown and the rocket takes off. This was very popular with the children at the last meeting, but as it was written for Michael's computer, a C4P MF, it will need to be rewritten before we pass it on to the school for their Superboards.

The next meeting will be on Sunday 24th April at 2pm at the Essendon Primary School, which is on the corner of Raleigh and Nicholson Streets, Essendon. Please note that the school will not be open for us until 1pm.

The last date for the acceptance of items for the May newsletter is the 13th May.

INDEX

This month we will cover the development of the graphics window of ARTIST. This was shown as a subroutine titled TOPLIN in the assembly listing published last month.

As its name suggests the graphic window occupies the top line of the screen. There is no location at the top of the screen common to all OSI systems so this information is set up as system data. The location where this is stored will be referred to as TOPLFT in future. Other information needed to set up the top line is:

        the first character in the line
        the width of the display.

These values would be available to the routine as 'variables'ie. stored in known locations in memory.

Let us assume that the first character in the display will be the one which is currently applied to the 'paintbrush' ie it is the currently selected character (CURCHR for short). WIDTH would be set up as part of SYSDAT when ARTIST is initialised. Since the value of WIDTH will not exceed 64 it would be practical to use indexed addressing to place the characters on the screen.

The main body of TOPLIN is a loop which will be repeated until the value of the index register = WIDTH. I used indirect indexed addressing so that the Y register is an offset to TOPLFT and the X register is used as a temporary variable to store the value of the character to be placed on the screen. I have seperated the graphics characters with blanks for greater clarity.

Initially X is set to the value of CURCHR. Inside the loop the procedure is:

        store the character in X on the screen
        increment Y
        if Y= WIDTH then end loop
        store a blank
        increment X
        increment Y
        if Y = WIDTH then end loop
        else repeat loop

In assembly language this would appear as:

```
186 LOOP    TXA
188         STA (TOPLFT),Y
190         INY
192         CPY WIDTH
194         BCS L1
196         LDA #$20
198         STA (TOPLFT),Y
200         INX
202         INY
204         CPY WIDTH
206         BCC LOOP
208 L1      RTS
```

Notice the use of the mnemonic TXA in line 186. This is one of the TRANSFER instructions.

The transfer opcodes are single byte INHERENT (Implied) mode instructions. This group of instructions enables imformation in one of the 6502s' registers to be moved into another register. The contents of the register supplying the imformation remains unchanged after the transfer is effected. However the 6502 does not have the ability to move data freely between all its registers.

The registers can be considered to be 'joined' as follows:

```
( S )(===)( X )(===)( A )(===)( Y )
```

Thus imformation can be moved directly between X and A or X and the stack pointer (S) or between A and Y. However data cannot be moved between Y and X or S and Y.

Mnemonics for TRANSFER instructions consist of T (for transfer) followed by the letters identifying the source and destination registers.
Thus TXA = Transfer X register to Accumulator
     TAY = Transfer Accumulator to Y register
     TAX = Transfer Accumulator to X register
     TYA = Transfer Y register to Accumulator
     TXS = Transfer X register to Stack pointer
     TSX = Transfer Stack pointer to X register
Notice that the last 2 give the ability to alter or examine the stack pointer. This is the only way in which the stack pointer can be directly controlled.

Now to return to ARTIST, the two subroutines controlling the graphic window contain only two operations; update the CURCHR and redraw TOPLIN. The assembly language versions of these consist of:

```
586 WINRYT DEC CURCHR
588        JSR TOPLIN
590        RTS
592 ;
594 ;
596 WINLFT INC CURCHR
598        JSR TOPLIN
600        RTS
```

Next months article will deal with the 'paintbrush' or cursor.

C2-4P MEMORY EXPANSION TO 48K
by Tony Knight

I had already carried out a few facelifts to my dear old C2-4P with the result that the Motherboard was already stuffed full of boards and there was very little memory space left when I wanted to increase memory size from 32K to 48K. As, without memory bank switching, I would have to discard the BASIC in ROM to find extra memory space, I elected to fit an extra 16K of RAM into the socket vacated by the BASIC ROM using piggyback 2128 RAM.

The new RAM occupies the address 8000 to BFFF and I have replaced DABUG III with a DADOS 2 monitor to cope with the new configuration. The upgrade cost me less than $100 and runs at 2MHz. If anyone is interested in this mod I will be happy to supply details.
My address is

Superboard

GOSUB PRINT

The Superboard is an excellent machine in most aspects, but the popularity of screen modifications shows that the biggest problem is the 24 character screen.

This is not such a serious problem in the actual programming. You can POKE15,0 to make a listing easier to read on the screen, though nothing beats a paper printout for debugging. If you do poke to 15, make sure that you return it to POKE15,72 before attempting to SAVE.

It is mainly when you display text on the screen during the running of a program that care is required to ensure that words are not broken at the end of a line. The following subroutine automatically arranges for any string up to a length of 255 characters to display at maximum legibility.

```
6000  L=LEN(A$):IF L<25 THEN  Z=L:GOSUB  6040:RETURN
6010  FOR R=25 TO 1 STEP -1
6020  IFMID$(A$,R,1)=" "THENZ=R-1:GOSUB6040:A$=RIGHT$(A$,L-R):
      GOTO6000
6030  NEXT:Z=24:GOSUB  6040:A$=RIGHT$(A$,L-24):GOTO6000
6040  PRINT LEFT$(A$,Z):IF Z<24 THEN PRINT
6050  RETURN
```

                   Following is a demonstration program.

```
10  A$="THE STRING CAN BE ANY LENGTH UP TO 255 CHARACTERS."
20  B$="CAN BE READ IN FROM DATA STATEMENTS AND CONCATENATED."
30  A$=A$+B$:PRINT A$:PRINT:GOSUB  6000:END
```

BASIC 4 DIRECTORY

Here is a program to access the correct BASIC 4 saved program from a directory which is the first program on the tape to be loaded and AUTO-RUN.

After typing the names of the programs in lines 10 to 90, save the directory as the first program on your tape with S=USR(D)"Directory. or however you normally save programs. Leave some space between it and your next program, so that you can add new names up to 9 total, or 10 if you use line 0 and 0 as a number.

```
10  PRINT"1= THE NAME OF THE FIRST PROGRAM"
20  PRINT"2= THE NAME OF THE SECOND PROGRAM"

        ETC, ETC
90  PRINT"9= THE NAME OF THE LAST PROGRAM"
100  PRINT:INPUT"WHICH # TO LOAD";N
110  PRINT:INPUT"WANT AUTO - RUN";A$
120  FORR=19TO27:READD:POKER,D:NEXT:IFLEFT$(A$,1)="N"THEN POKE26,0
130  POKE23,N+48:X=USR(X)
140  DATA  76,171,176,40,0,41,34,34,0
```

The programs in the directory are then saved with consecutive numbered USR calls, USR(1) being the first, and USR(9) being the ninth.

— SUPERBOARD —

SOFTWARE REVIEW - Universe

Universe is an 8k M/C arcade game, available to suit the C1 or C4. If you occasionally wander through the arcades to note anything new in the video games world, you will have seen a similar game named "Scrambler".

You control a space rocket and run the gauntlet of a planetary defence system which includes missiles, meteorites, and a complex tunnel network. Your weapons include bombs and a laser gun, and you can manoeuvre in any direction. The missiles track you, and while evading them you have to rain down bombs on fuel stations to top up your tanks. In the tunnel maze, you need considerable dexterity to avoid collision with the walls, while blasting away objects in your path. If you get through the first time, the game continues, getting harder each time through, until you lose three rockets. All the way along you score points, the number depending on what you can shoot or bomb, and the score is continually updated at the top of the screen.

Universe will be a joy to the dedicated arcade games fan. It is superbly done, on a par with OSI Invaders and Monster Maze. Universe is available from DMP SYSTEMS, 319 Hampton Blvd, Rochester, N.Y. 14612 U.S.A. The C1 version is in the OSUG Library at the usual postage rates.

- -

HARDWARE REVIEW by Robin Wells

Not being particularly impressed with the Tasan board, I decided to buy the U.K. Screen Enhancement Kit (SEK). The cost is $100 but there is an additional import duty of about $50. SEK is available made up or as a kit. The board is very well made with plated thru holes, but the tracks are rather fine, requiring careful soldering. All components, including IC sockets are provided with the kit. The 7 x 7 inch board connects to the Superboard via five ICs which are removed from their sockets and plugged into the SEK. Two tracks on the Superboard are cut, and one link is added.

A 32 x 64 format Cegmon monitor is required with the SEK, but if you already have a 24 x 24 Cegmon, it can easily be reprogrammed for the needed change. In operation, the board is excellent. One poke is all that is required to call up any one of twenty screen formats including inverse video ones. This status remains unchanged on a reset.(BREAK)

My only criticism is that the instructions are not very clear regarding differences for the UK101, and Series 1 & 2 Superboards. I found that a 820 pf capacitor needed to be removed for reliable format changes. The real strength of the SEK is the ease with which you can set up your machine to suit programs written for UK101 or C1P or C4P in any known screen size modification. The SEK is available from Premier Publications, 208 Croydon Road, Anerley, London SE20 7YX.

- -

Versatile Video Amplifier by Robin Wells

The Superboard produces less than a ½ volt of video, and this is insufficient to drive some TVs. One simple way is to remove R61 (220 ohm) but level is still marginal. The video amp at right can be built on a small piece of veroboard and powered from the TV. It can easily be fitted on the back of the case of the TV. The gain is adjustable from 1.5 to 5.5.

Ed Richardson.
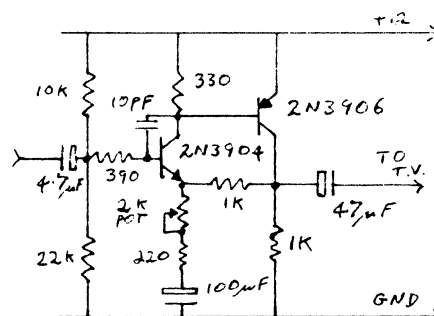
THE MEETING WAS KAOS
by King Corky

Things are looking up. I could not help but notice that the 'Front Row Hecklers' or 'the Rabble Bored' have now been relegated to the back benches, (must be Liberal supporters).

The first item on the agenda was the offering of the 1st thru 5th Books of OSI. At between $7.95 and $9.95 each, they are a bit expensive, but if we can get enough orders, the price will reduce. These are paperback books, they are not available in Australian bookshops and are filled with lots of goodies for all user's, (ROM BASIC, 65D and 65U), and include OSI's technical releases. From David Wilson comes the news that Rockwell have released a FORTH Processor machine with ROM interpreter. (1 hope I got that right.) Again we received conformation that the 6502 is the largest selling chip in the world, (over a million installations).

The chief executive of the Rabble Bored, Paul and Michael, have developed further extensions to COMP-DOS, now V 1.3, with a marry of 1.2 and OS65D 3.3 plus some other goodies, price is $35 to new customers and $15 to members with a legal copy of COMP-DOS 1.2. C4P 5.25" version is available immediately and the 8" version will be available when they download it on George's new C3 hybrid, the one with quad microprocessors, 6502, 6800, Z80 and 68000, which was also on demo at the meeting. George also mentioned double-density disks for OSI, complete with software support. Tasmania have available a 6502 dedicated controller board containing uP, 2K RAM, VIA and EPROM.

One thing very evident at the meeting was the lack of suitable software for the kids learning program. The programs we have got are, to be kind, insipid. We need more thoughtful, or thought provoking programs if we are to keep the kids interested in learning programmings skills away from games and if we are to keep the school as a free meeting place. If the new principal, (computer sympathetic or not), becomes too disillusioned with the club's ability to teach the kids anything, he may decide to reneg. Who knows what we would do without the school?? So I suggest we all put our thinking caps on, (even ask your own kids for ideas), and put fingers to the keyboard and write.

KAOS-WA *—Not Quite so Chaotic*

At our last meeting (20/3/83), I found it difficult to conduct the small amount of business we had, due to the fact that members were keen to share experiences and problems. I suspect that some were solved but as often happens, others were created by the solutions used.

The meeting decided to call our group KAOS-WA in recognition of our 'affiliation' with KAOS ("the Mother Group"). It was also decided to subscribe to PEEK (65) and form a library so members can borrow the magazine. To allow us to do this and obtain some back copies of PEEK (65) from an ex OHIO owner, would members bring $5 to the next meeting.

Our next meeting is to be on Sunday 22nd May at 2pm in Guild House (top floor) 56 Keshorn St, Mount Pleasant. Joe Fisher will be demonstrating his Votrax TYPE 'N TALK at this meeting.

Gerry Ligtermoet,

THE SYDNEY MEGA-WOW COMPUTER SHOW
by Michael Lemaire

A couple of weeks ago Rosemary, Ian, George Nikolaidis, Paul Dodd, Nick..er..somethingorother and I shot up to Sydney over the long weekend to see the amazing Australian Personal Computer computer show. (Don't call us jet-setters though, unless you think sleeping in the back of George's Commodore is luxury travel). Rosemary and Ian were smart, they went by bus and returned by train.

Sydney's still the claustrophobic dump I remembered it to be; however certain members of the party seemed to enjoy the seedier areas:- "Great atmosphere" said Paul, emerging from....well we won't go into that.

When we got to Centerpoint we found the foyer was packed with kids and their parents, queued up, waiting to pay their money and get in. Fortunatly we had complementary tickets from APC and were able to go straight into the display area. We were told later that people were waiting over one hour to get in.

The show; ah yes the show...generally it was one big video game expo, with VIC's and ATARI's strewn in all directions on the four floors. The place was full of little munchkins jumping on keyboards and being lost by their parents. ("Would Carl Gruber go to the security post where his mother is waiting for him?")

There were some good exhibits. NEC were showing off the APC (Advanced Personal Computer), which has the best raster graphics I've ever seen - It has an intelligent video chip made by NEC, capable of drawing lines and polygons all by itself on a 1024 by 1024 pixel virtual plane with a relocatable window of 640 X 400 in 8 colours. It was FAST too.

EPSON had their new micro on display, it has a HASCI keyboard (very nice) and (surprise, surprise) it uses NEC's video chip.

APPLE was putting LISA through its paces. It has a high-resolution video screen which the system used to simulate an office enviroment. For instance, to copy a file, you pick up the file from the desk and stick it on the photocopier symbol. To delete a file, you drop on the rubbish bin picture. The system looks identical to Smalltalk; APPLE says LISA is BASED on Smalltalk, but it seems nearly a direct copy. A very nice copy, I must say. (I'd like to write something similar for my machine, but I just can't find the time....busy, busy, busy..)

There were some business system setups at the show, the usual CP/M machine running unexceptional acounts and spreadsheet programs, but overall the show was pitched at families with kids wanting video games. Paul and I were approached by an earnest fellow from the Sigma Institute who offered us a chance to learn 'All About Computers', and to even (gosh!) learn BASIC. We explained how we fooled around with PASCAL and C and FORTH and ASSEMBLER and FORTRAN and COBOL (well, not COBOL if I can avoid it) and micro's and Interdata 7/16's and......he stopped haranguing us.

The usual Nice Young Ladies were on some of the displays, they didn't know much about computers but they helped take your mind off how hot and crowded it was. (George! Control yourself!)
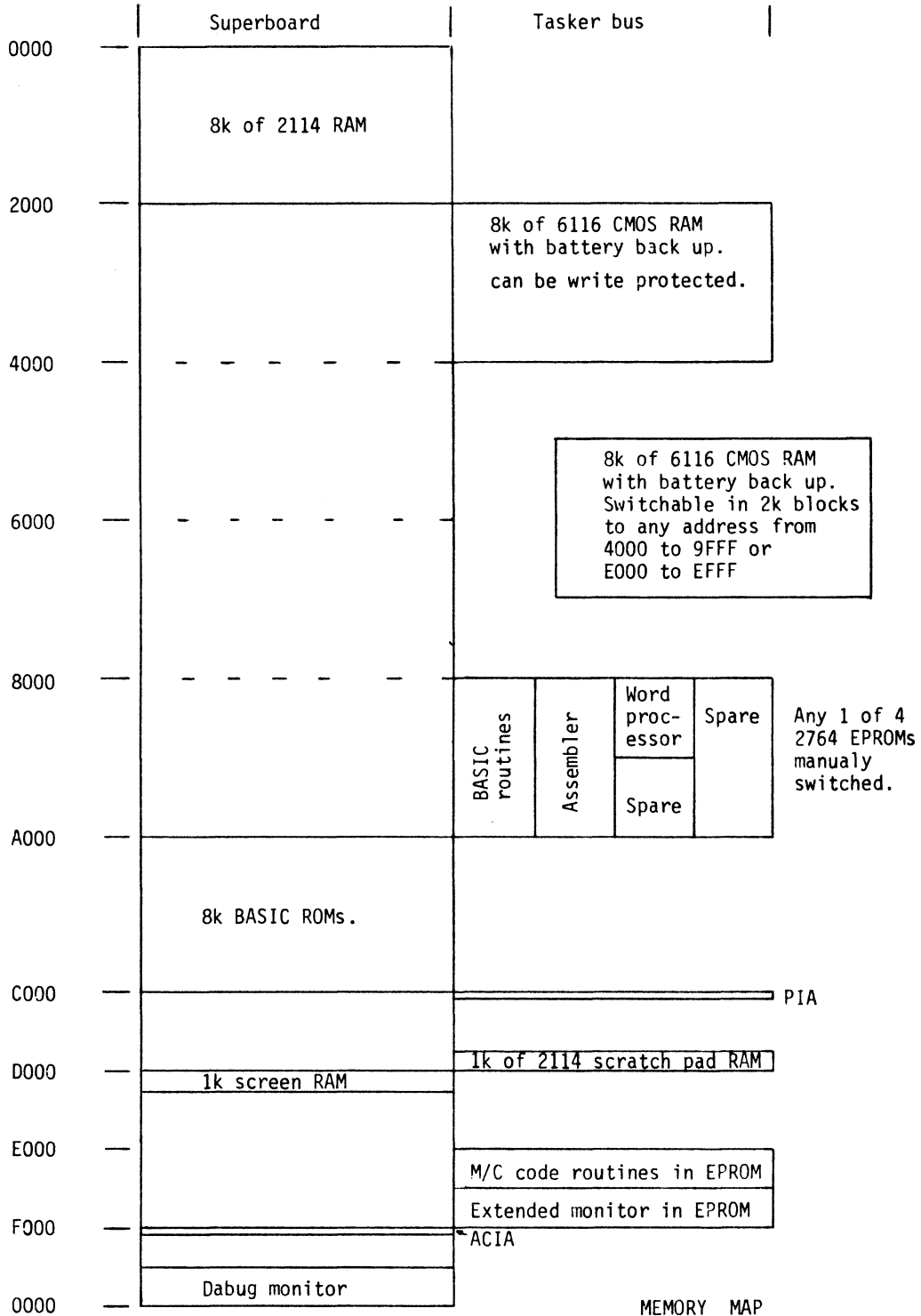
MY SUPERBOARD II series 2
by John Whitehead

In the coming months I will be writing about my Superboard series 2. (That's the one that has a 2 pin sound socket on the left side and hardware for 48x12 screen).

Apart from taking a 6800 microprossesor course and doing a small amount of BASIC on a PDP 8 using a teletype, I did not know much about computers when I bought mine from George at Compsoft in Feb. 81.

When I bought my Superboard it had 5k of RAM, the standard monitor and no power supply, it now has 26k of RAM, 34k of ROM and a PIA. I do not have a disc system.

```
         |    Superboard    |   Tasker bus         |
0000 —  ┌──────────────────┐
        │                  │
        │   8k of 2114 RAM  │
        │                  │
2000 —  │                  ├──────────────────────┐
        │                  │ 8k of 6116 CMOS RAM  │
        │                  │ with battery back up. │
        │                  │ can be write protected. │
4000 —  ├ — — — — — — —────┤                      │
        │                  └──────────────────────┘
        │                  │ ┌──────────────────────┐
        │                  │ │ 8k of 6116 CMOS RAM  │
6000 —  ├ — — — — — — —    │ │ with battery back up. │
        │                  │ │ Switchable in 2k blocks │
        │                  │ │ to any address from  │
        │                  │ │ 4000 to 9FFF or      │
        │                  │ │ E000 to EFFF         │
        │                  │ └──────────────────────┘
8000 —  ├ — — — — — — —────┼────┬────┬──────┬──────┐
        │                  │    │    │ Word │      │ Any 1 of 4
        │                  │BASIC│Assem│ proc-│Spare│ 2764 EPROMs
        │                  │rout.│bler │ essor│      │ manualy
        │                  │     │     ├──────┤      │ switched.
        │                  │     │     │Spare │      │
A000 —  ├──────────────────┤────┴────┴──────┴──────┘
        │                  │
        │   8k BASIC ROMs. │
        │                  │
C000 —  ├──────────────────┼══════════════════════> PIA
        │                  │ ┌1k of 2114 scratch pad RAM┐
D000 —  │   1k screen RAM  │ └──────────────────────┘
        │                  │
E000 —  │                  │ ┌──────────────────────┐
        │                  │ │ M/C code routines in EPROM │
        │                  │ ├──────────────────────┤
F000 —  ├──────────────────┤ │ Extended monitor in EPROM │
        │                  │◄── ACIA
        │  Dabug monitor   │
0000 —  └──────────────────┘       MEMORY  MAP
```

When I plan any alteration to my computer my aim is, that after any mod that I do, the Superboard will still work with any expansion system disconnected, and will RUN standard BASIC and machine code programs and that BASIC programs I write that RUN in 8k will RUN on other Superboards. The only exception to this is programs with string arrays due to item 13.

Below is a list of additions etc. that I have made so far.

1	Dabug Monitor	14	Tape libary take over
2	Power supply and case	15	BASIC utility programs in EPROM
3	1MHz-2MHz CPU clock switch		
4	Fast load hardware (failed)	16	CMOS RAM on Tasker board
5	Real time clock	17	Rewrite the Extended Monitor
6	Extra 4k of 2114 RAM	18	Machine code routines in EPROM
7	Screen hold switch		
8	Joysticks	19	Alter EPROM programer for 2732s
9	Teletype model 15		
10	Tasker bus EPROM board, PIA and 2716 programer	20	D to A sound output via TV for music
11	Modify the Extended Monitor and put it in EPROM	21	Built another EPROM programer for 2716, 2732 and 2764s.
12	Fast cassette hardware	22	Alter a 2716 board for 2764s.
13	BASIC garbage bug fix		

Next is a list of my software that I have in EPROM.

Cold or warm start BASIC at any address.
Real time clock
Screen swap for Ext. Mon.
Compare blocks of memory
Dec to Hex to Dec.
Disassemble any M/C program without stopping
Extended Monitor.
BASIC search and change
BASIC block line remover

Nondestructive simple memory test
BASIC trace
BASIC auto line numbers
BASIC line renumberer
Teletype routines
BASIC crash recovery
Ext. Mon. don't care search
Relocate BASIC to any address and RUN it

The Assembler and Word Processor will be in EPROM shortly and they will be able to be RUN without being moved to low memory.

MODEMS

There are still 6 of the free modems left, (refer KAOS 3/3 page 7), as several of the members who said they wanted them apparently quailed at the postage cost. About $8 to most areas and $9 to TAS or WA. First to send money will get the modems. There are also 19 modems boards. The circuit is practically identical to the terminal ends, of course, but there is no box or power supply. Cost of sending these is $2 or $3 if you want them by certified post. I hope to have circuits for the boards by the time you read this, but if not I will enclose the full terminal modem circuit. Add 10c if you send me a cheque. KAOS has a full list of present modem owners and chances are that there will be one near you.
Ed Richardson, :

WHY COMP-DOS 1.3 ONLY RUNS ON A C4P AND DOESN'T HAVE SINGLE KEY BASIC
by Paul Dodd

As some of you will have found out, COMP-DOS 1.3 isn't available for C1Ps. "Why not?", I hear you ask. "Because it isn't", I say. "Be sensible", says Rosemary, "this is meant to be a serious article". But now the real reasons....

C1Ps were originally cassette machines, and while you can upgrade them to disk this forms a non-standard system which would require a special version of OS65D v 3.3 to run on it.

All is not lost however! If you have.a Video board and have reversed the diodes on your Superboard then you have a pseudo C4P which will run OS65D v 3.3 quite happily (see notes). The moral of this story is, if you have a C1PMF without a Video board then buy one, you will make George very happy (he could do with the cash) and you will have a decent video display at last, most importantly, you will be able to run COMP-DOS 1.3 (WOW! whistles, cheers etc.).

Now on to other matters: Single key BASIC. Why haven't we included it? Well firstly, OS65D 3.3 uses the ESC key for other purposes so this would conflict with Single Key protocol (big word time). Secondly, Single Key BASIC should not be included as part of a DOS since it is too specific (pertaining only to BASIC). In later releases of COMP-DOS we may incude a user definable key option, where each key can stand for an entire string, but that is for later releases......

A few other notes. If you have a 610 board, delete line 10 of the BEXEC* or the disk interface will die (there's a conflict between our printer interface and the 610 board). If you have a pseudo C4P (ie. C1P & RABBLE board & VIDEO board) then after pressing (BREAK) (D) you must press (REPEAT) to complete the BOOT)

PARALLEL RESISTOR CALCULATOR

   Here is a program which will allow you to calculate which two resistors,
in parallel, will make a resistor value you need, ie.
If you need a 3.5K resistor for a project then you feed 3.5 into this program
and it will tell you all the 2 resistor combinations which will make up the
value you require and also show the error percentage.

```
5 REM PARRELLEL RESISTOR CALCULATOR
10 REM BY Nigel Bisset
20 DIM R(300)
30 E=24 : FLAG=0
40 DATA 1,1.1,1.2,1.3,1.5,1.6,1.8,2,2.2,2.4,2.7
50 DATA 3,3.3,3.6,3.9,4.3,4.7,5.1,5.6,6.2,6.8,7.5,8.2,9.1
60 R=10^(1/E):R1=LOG(R)
70 FOR A=1 TO E:READ R(A):R(A+E)=R(A)*10:NEXT A
80 DEF FNR(X)=R(INT(LOG(X)/R1+1.5))
100 REM   START
110 FOR K=1 TO 3:PRINT:NEXT
120 INPUT"ENTER DESIRED VALUE IN THE RANGE 1 TO 10 OHMS";X
125 PRINT
130 IF X<1 OR X>10 THEN 110
140 IF X=FNR(X) THEN PRINT X;"OHMS IS A PREFERED VALUE!":GOTO 110
160 PRINT" R1              R2              EQUALS          % ERROR"
165 PRINT"--------------------------------------------------------------
170 N1=INT(LOG(X)/R1+2):N9=INT(LOG(2*X)/R1+1.5)
180 FOR A=N1 TO N9
190 Y=FNR(1/(1/X-1/R(A))) : IF Y=0 THEN 230
200 B=1/(1/R(A)+1/Y)
210 E1=100*(B-X)/X
220 PRINTR(A),Y,B,E1
230 NEXT A
240 INPUT"DO ANOTHER";Q$
250 IF LEFT$(Q$,1)<>"N"THEN110
260 END
```

FIX FOR THE INTERFERENCE BETWEEN EXMON AND DOS
by Ray Gardiner

   You may be interested to learn the cause of the interference problem. It
appears that the problem is caused by an error in the original code.

   The relevent code is at $172F, which stores $FF's from $D0 to $FF, and
includes the location $EF which the DOS uses for its step rate.

   However XMON should only put $FF's in $D0 to $DF so correct the code as
follows.

OLD CODE		NEW CODE	
$172F	LDX #$2F		LDX	#$0F
$1731	LDA #$FF		LDA	#$FF
$1733	STA $D0,X		STA	$D0,X
$1735	DEX		DEX	
$1736	BPL $1733		BPL	$1733

Apply the correction as follows, using the Extended Monitor.
   For 8" disk systems
   : ! CA 4700=07,1/9
   : @ 4730   2F 0F
   : ! SA 07,1=4700/9
   For 5" systems the track number is 10, not 9.

MORE FROM THE WEST
by Wayne Geary

Although I have not as yet written any programs using my new video facilities (see Vol 3 No 2) some experimenting with small routines and ideas showed up a major flaw in OSI's screen handling routine at the top of ROM BASIC. This flaw is the inability to scroll the COLOUR (or in my case EFFECTS) memory in synchronism with the normal video RAM. To overcome this I have rewritten the routine at $BF2D so that by using a page 0 flag I can retain or scroll the EFFECTS/COLOUR memory as I wish. The routine will fit into existing space, does not require the information in the Monitor ROM and would be suitable for C2 and C4 machines using BASIC in ROM.

I have also rewritten the screen clear routine from DABUG to utilise the same page 0 flag to enable me to retain or clear the EFFECT/COLOUR memory when the normal video RAM is cleared. This routine now resides in a different location in my system.

The monitor for my system has been modified to allow access to BASIC, SIMPLE MONITOR, EXTENDED MONITOR, ASSEMBLER/EDITOR, and WORD PROCESSOR directly from the initial menu. Anyone not contemplating disc drives could carry out a similar mod to reduce key-strokes for entry to the programs in ROM/EPROM.

I have rewritten the WP6502 to fix some bugs and shorten the length by approx 110 bytes, I have burnt both the Monitor and Word Processor into a 2732 (4K) EPROM and placed it into the Monitor ROM socket. With a few alterations to the addressing the 2732 appears as two seperate 2K blocks with the Word Processor at $E800 and th DABUG monitor at $F800. It should be noted however that this is only practical if discs are not being used as the disk boot routine is no longer available.

I have altered my video board (again) and now have (well almost) the ability to display all 32 lines. This is done by adding a vertical guard band using a chip already on the board (unless you use colour involving IC U4A - see page 6 of video circuitry). Timing is somewhat critical and at the moment there are two possibilities:
Add the vertical guard band only and put up with some garbage at the top of the screen, or
Modify the blanking circuitry as well and possibly lose the top row of dots on the first dozen characters on the top line.

Anyone who is interested in carrying out similar mods and wants details can write to me at :

BUY AUSTRALIAN ??
by Ed Richardson

In November 1982 the BBC model B microcomputer was demonstrated at a KAOS meeting by a representative of Barson Computers. This very impressive colour graphics machine costs $1770 from Barson, and a model A costs $1440.

A very recent quote from a British retailer was 347 pounds for the model B and 260 pounds for the model A. Air freight and insurance adds 40 pounds, duty and sales tax is $180 and $133 for B and A models respectively. Grand totals in $A would be $844 for a model B and $643 for the model A. You can be assured that Barson Computers are buying BBC's at cheaper than retail!
As for back-up service facilities: Phooey! Most competent computer repairers would have no great difficulty with the BBc computers. If you want a BBC, deal direct.

```
10                          ; PSEUDO RANDOM BYTE MEMORY TEST
20                          ;
30                          ;BEFORE RUNNING TEST PRESET THE FOLLOWING
40                          ;LOCATIONS IN LOW BYTE HIGH BYTE FORM
50                          ;
60                          ; 'MSTART'=$00,01 START ADDRESS OF
70                          ;                 MEMORY TO BE TESTED
80                          ; 'MEND' =$02,03  ENDING ADDRESS+1 OF
90                          ;                 MEMORY TO BE TESTED
100                         ;
110                         ;START EXECUTION AT 'ENTRY'
120                         ;
130                         ;IF MEMORY TESTS OK THEN 'X' PRINTED
140                         ;
150                         ;IF ERROR 'E' WILL BE PRINTED AND PROGRAM
160                         ;WILL STOP,RESET COMPUTER AND EXAMINE
165                         ;FOLLOWING LOCATIONS :-
170                         ;'MPOINT'=ADDRESS OF ERROR (4,5)=LO,HI
180                         ;'DATA' =CORRECT TEST DATA (6)
190                         ;'ERROR' =ERROR DATA (7)
200                         ;
210                         ;
220                         ;PAGE ZERO LOCATIONS
230                         ;
240 0000=                       MSTART=0
250 0002=                       MEND  =2
260                         ;
270 0004=                       MPOINT=4
280 0006=                       DATA  =6
290 0007=                       ERROR =7
300                         ;
310 0008=                       RANDOM=8       PSEUDO RANDOM DATA WORD
320                         ;
330 0200                        *=$0200        TEST ENTRY POINT
340                         ;
350 0200 A2FF      RNDTST LDX #$FF
360 0202 9A               TXS            SET STACK POINTER
370 0203 E8               INX            INDEX FOR OSI VIDIO
380 0204 D8               CLD
390                         ;
400 0205 205F02    RBTEST JSR SETPNT     SET 'MPOINT'
410 0208 A509             LDA RANDOM+1   SAVE RANDOM
420 020A 48               PHA
430 020B A508             LDA RANDOM
440 020D 48               PHA
450                         ;
460 020E 204602    RT.1   JSR RNBYTE     GET RANDOM DATA
470 0211 9104             STA (MPOINT),Y WRITE TO BLOCK
480 0213 206802           JSR ADJPNT     NEXT LOCATION
490 0216 90F6             BCC RT.1       CONTINUE
500                         ;
510 0218 68               PLA
520 0219 8508             STA RANDOM     RESTORE RANDOM
530 021B 68               PLA
540 021C 8509             STA RANDOM+1
550 021E 205F02           JSR SETPNT     SET 'MPOINT'
560 0221 4C2902           JMP RT.3       SET 'MPOINT'
570                         ;
580 0224 206802    RT.2   JSR ADJPNT     NEXT LOCATION
590 0227 B015             BCS RT.4       DONE
600 0229 204602    RT.3   JSR RNBYTE     GET RANDOM DATA
610 022C 8506             STA DATA
620 022E B104             LDA (MPOINT),Y GET MEM DATA
630 0230 C506             CMP DATA       SAME?
640 0232 F0F0             BEQ RT.2       YES  CONT
650                         ;
660 0234 8507             STA ERROR      NO   ERROR DATA
670 0236 A945             LDA #'E
680 0238 207902           JSR OUT
690 023B 4C3B02           JMP *          STOP EXECUTION
700                         ;
710 023E A958     RT.4    LDA #'X         BLOCK DONE MARK OK
720 0240 207902           JSR OUT
```

```
730  0243  4C0502            JMP  RBTEST        REDO TEST
740                          ;
750  0246  A409    RNBYTE     LDY  RANDOM+1      RANDOM=(RANDOM*5)+1
760  0248  A508            LDA  RANDOM         W/OVERFLOW
770  024A  0608            ASL  RANDOM
780  024C  2609            ROL  RANDOM+1
790  024E  2608            ROL  RANDOM
800  0250  2609            ROL  RANDOM+1
810  0252  38              SEC
820  0253  6508            ADC  RANDOM
830  0255  8508            STA  RANDOM
840  0257  98              TYA
850  0258  6509            ADC  RANDOM+1
860  025A  8509            STA  RANDOM+1
870  025C  A000            LDY  #0             CLEAR (Y)
880  025E  60              RTS
890                          ;
900  025F  A500    SETPNT     LDA  MSTART        SETUP 'MPOINT'
910  0261  8504            STA  MPOINT
920  0263  A501            LDA  MSTART+1
930  0265  8505            STA  MPOINT+1
940  0267  60              RTS
950                          ;
960  0268  48      ADJPNT     PHA                SAVE (A)
970  0269  E604            INC  MPOINT         ADJ 'MPOINT'
980  026B  D002            BNE  *+4            NO PAGE CROSS
990  026D  E605            INC  MPOINT+1       ADJ PAGE
1000                         ;
1010  026F  A504            LDA  MPOINT         TEST IF BLOCK DONE
1020  0271  C502            CMP  MEND
1030  0273  A505            LDA  MPOINT+1
1040  0275  E503            SBC  MEND+1
1050  0277  68              PLA                RESTORE (A)
1060  0278  60              RTS                C=SET=BLOCK DONE
1070                         ;
1080  0279  9DCED0   OUT      STA  *DOCE,X       FOR OSI VIDIO
1085  027C  8ECDD0            STX  *DOCD
1090  027F  E8              INX
1100  0280  8D01FC            STA  *FC01          FOR OSI SERIAL
1110  0283  60              RTS
1120                         ;
1130                         END
```

THE LATEST ADDITIONS TO THE CLUB TAPE LIBRARY
by John Whitehead

'Surchange' by Kerry Lourash from MICRO August 82.
This is a very good utility for BASIC which can search and/or change any text in a BASIC program listing. I have modified it slightly for DABUG and the club has it on tape for $3. The program is located at $1D00 to $1FFF but if can be relocated and I have it in Eprom in my Superboard at $9900.

'Music for the C1P' by Gerald Artman from AARDVARK Journal June and August 82 for $2. This is for Superboards with the two way sound port output on its left side. You type in the notes and duration you want one by one and they can then be played back or saved on tape for later replaying.

To run adventure games with BASIC 3 Garbage Bug fixed with an Eprom, poke 7930,96 before running.

Bernie Wills has modified C1P Sargon chess and Aardvark chess to work with his enhanced character set (see KAOS Aug.82), of which I have the details.

Ordering club programs on tape. Blank C15 tapes $1 each. One BASIC program $2. Two BASIC programs on one tape $3. Machine Code programs $3 or more per program. Please order at least 3 weeks in advance for pick up at the club meeting. If you can't pick up, post and packing is $1 for one or two tapes. Any small profit made goes to the club.

QUICK TIPS for 3.3
by Frank Brown

When using Comp DOS 1.3 with OS65D 3.3 the BASIC error codes are modified by a Trap command in BEXEC*. Errors in BASIC will appear without the line number. To restore the normal function of the BASIC error routines, Type in Immediate mode 'TRAP 0'.

When using programs written under OS65D 3.2, on OS65D 3.3, DATA statements which contain strings will have to be modified, eg.

(OS65D 3.2)

10 DATA END,MIDDLE,START

(OS65D 3.3)

11 DATA "END","MIDDLE","START"

15 DIM A$(3)
20 FOR X=1TO3:READ A$(X):NEXT X

Boot up a disk with OS65D 3.2 and RUN line 10, it runs OK. Now boot up OS65D 3.3 and try the program, you will find that you have to delete line 10 to get the program to run.


ANY BASE CONVERTOR

This program will convert any number in one base to its equivelent in another base, ie. BINARY DECIMAL - HEX - OCTAL - BASE 31 etc.

```
5 REM  BASE NUMBER CONVERTER
10 PRINT:INPUT"FROM WHAT BASE";A
20 PRINT:INPUT"TO WHAT BASE";E
25 IFA>36ORE>36THENPRINT:PRINT"BASE 36 IS THE LIMIT":RUN
30 PRINT:INPUT"NUMBER TO BE CONVERTED";A$
40 FOR B=1 TO LEN(A$):C=ASC(MID$(A$,B,1))
60 IFC>900RC<48 THEN 90
70 IFC=>65 THEN C=C-55:GOTO100
80 IFC<=57THENC=C-48:GOTO100
90 PRINT:PRINTA$;" IN BASE";A;"NOT VALID":RUN
100 D=LEN(A$)-B:IFC=>ATHEN90
110 C=C*A^D:S=S+C:NEXTB
140 G=INT(S/E):F=INT((S/E-G)*E+.01)
160 IFF<10 THEN F=F+48:GOTO180
170 F=F+55
180 G$=CHR$(F):F$=G$+F$:IF G=0THEN210
200 S=G:GOTO140
210 PRINT:PRINTA$;" IN BASE";E;"IS ";F$:PRINT:PRINT:RUN
```

2MHz EPROM
by Graham Gaiger

My Superboard II (MKI) has been modified to use an 8.43MHz Xtal, divided down for a CPU clock of 1.05MHz switchable to 2.1MHz (approximately). I have fitted BASIC 5 and Toolkit 2 Eproms (2716's) ex U.K. which I can thoroughly recommend. When I first used them in a conventional type of interface circuit, being standard 2716's, they would only work at 1MHz. However, whilst experimenting, I found by using the following circuit, I could get perfectly reliable operation at 2+MHz, AND with power down de-select. (Almost something for nothing.)

When I got my BASIC 3 transferred (with corrected Garbage Collection routine, courtesy Earl Morris, PEEK(65)) into a 2716, I modified the ROM socket to accept the EPROM and tried the same circuit. It also worked. Thinking someone else might like to try it and comment, here's the circuit:-
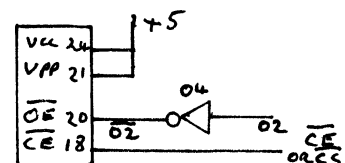
FOR SALE

SUPERBOARD II, TASAN VIDEO Board, Tasker Buss with 3 X 8K RAM boards, PIA/VIA Board, 10A 5V/12V Power Supply, 1/2 MHz switch. Separate keyboard with numeric keypad. $550

SUPERBOARD in standard club case with additional expansion case containing power supply and Motherboard for Tasker Buss expansion kit, complete with Philips B&W TV, cassette recorder, approx. 30 game cassettes and extensive OSI documentation. Must sell, transferred to the USA. $500
Adrian Heinrich PH.

HITACHI PEACH 64K colour computer, 4 disk drives with controller card, high resolution colour monitor, software includes Hi-Writer word processor, Documentation includes PEACH service manual. As new $2850 ONO (Will separate) ASR35 teletype, console model with spares and handbook, good condition. Offers.   Tony Knight 4 Goessling Pl, Flynn, ACT 2615 PH.(062) 58 1873

DOT-MATRIX/GRAPHICS PRINTERS

Seikosha GP-100, 10", 116 ASCII characters...........$425.00
Microline 80, 80 column, 80 cps......................$575.00
Microline 82, 80 column, 120 cps, bidirectional.....$920.00
C-Itoh 8510, 8", 112 cps, bidirectional.............$895.00
C-Itoh 1550, 13", 112 cps, bidirectional...........$1165.00
All prices include tax.
Computer Clinic, P.O. Box 68, Aspley, QLD 4034 PH. (07) 269 8573

TASKER BUSS system, 3 X 8K RAM cards and one Motherboard and Header card. All in perfect working order. $160 the lot or will separate.
Paul Brodie,

1 Tasker Eprom Board with support ICs, EXMON and BASIC 5 to suit Cegmon Monitor. (The BASIC 5 is original as purchsed.)
Ken McNeill,

SUPERBOARD II Series I, 8K RAM with RS232 and D.A. wired, all in metal case with power supply. Comes with manuals, circuits, software and accessories. $350 O.N.O. Ring Michael

WANTED:
OHIO 505B board in any condition. Ring Nigel Bisset

CLARIFICATION
by Rodney Eisfelder

Frank Halley's changes in KAOS 3.6 to DISK BASIC are only required if you re-use all the space freed by the speed improvements, (specifically locations 1883, 1884 & 1986). These locations are not re-used in the suggested modifications in KAOS 2.8 and 2.11 and 2.12.